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Rent-Seeking Trade Policy

A Time-Series Approach

Martin Rama

Foreign-trade barriers that benefit a single firm or industry are more likely to increase with discretionary trade policies and under dictatorships. And although these barriers may produce short-run benefits, in the long run they have a negative effect on the growth rates of output and exports.

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This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to understand the political economy of protection. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dawn Ballantyne, room N10-023, extension 37947 (May 1993, 17 pages).

Using a time-series approach, Rama analyzes the relationship between the extent of rent-seeking trade policy and both political and economic variables. For rent-seeking trade policy, the indicator he uses is the number of foreign-trade regulations passed each year for the benefit of a single firm or industry.

Rama uses data from Uruguay for 1925-83. Uruguay, which experienced an impressive economic decline, is an outstanding example of a rent-seeking society. After being a wealthy economy in midcentury, it suffered almost complete stagnation, which led to social and political disintegration by the end of the 1960s. Three decades of restrictive regulations on foreign trade had created a nearly closed economy by the end of the 1960s. It was worth analyzing whether policymakers' great receptiveness to demands for protection could account for Uruguay's decline.

Over the period 1925-83, Rama finds almost 4,000 laws, decrees, and administrative resolutions that create, maintain, or modify a foreign-trade regulation for the benefit of a single firm or industry. About half of them explicitly identify the petitioner — usually a firm or guild. Since the size of the Uruguayan economy changed over the period studied, Rama scales the annual number of regulations by output or exports to measure the extent of rent-seeking trade policy.

Rama shows that the extent of rent-seeking trade policy increased with discretionary policies and under dictatorship. (In the period studied, there were two stages of democracy — until 1932 and from 1943-72 — and two stages of dictatorship.) He also shows that rent-seeking trade restrictions increased under import-substitution strategies and, more unexpectedly, under active export promotion. This suggests that discretionary power leads to wasteful distribution, whether it is used to support inward- or outward-oriented policies.

Finally, Rama analyzes the correlation between innovations in the trade policy indicator and innovations in the growth rates of output and exports, with a lag of up to 20 years. Surprisingly, he finds a positive correlation with output growth rates after two or three years. But the correlation becomes negative some years later, particularly in the case of exports. The short-run positive impact on growth rates, together with the surprisingly long time lag before the negative impact, may account for policymakers' receptiveness to demands for protection.

Rent-Seeking Trade Policy: A Time-Series Approach*

by
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1. Introduction

In contrast with the theory of international trade, which treats trade barriers as exogenous, the political economy of protection focuses on the process leading to transfers in favor of specific groups at the expense of the general public. Based on the economic self-interest approach, it shows that the conduct of trade policy depends on both the objectives of policy makers and the institutional setting governing the interaction between them and the gainers and losers from protection. It shows, moreover, that significant welfare losses may arise from competition among the potential recipients of the transfers.[1]

Although the theory is very suggestive, assessing its empirical relevance is not an easy task. The diversity of trade policy instruments makes a sound estimate of the quantity and the importance of trade restrictions difficult, particularly as regards non-tariff barriers. For this reason, applied research has been concerned either with the voting behavior of congressmen on trade issues, or with the cross-section relationship between tariff rates and industry characteristics.[2] In addition, a number of interesting case studies have appeared.

However, the data used in this applied research are not the best suited to deal with some specific aggregate-level issues. Thus, according to the theory, different institutional settings should lead to different levels of protection (see Weck-Hannemann, 1991); but what are the actual consequences of changes in the discretionary power of political agents? Similarly, Olson (1982) has convincingly argued that policies promoted by distributional coalitions have to do with the long-run decline of nations; but how significant is the effect, and what are the time lags involved?

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1 Baldwin (1989), Hillman (1989), Magee, Brock and Young (1989) and Mueller (1989, chapter 13) provide comprehensive surveys of this approach.

2 For an application of the cross-sectional approach to developing countries, see Amelung (1989).

To address such aggregate-level issues, this paper adopts a time-series approach.[3] The chose trade policy indicator is the yearly number of statutes which create, maintain or modify a foreign-trade regulation for the benefit of a single firm or industry. Typical examples are the setting of a tariff for a final good, or the reduction of an import duty for an input. But the statutes may also concern export subsidies, special exchange rates, reference prices (i.e. the gaugings on which tariffs are applied), draw-back regimes, import licenses, export prohibitions, suspension of tax payments, etc.

The data are from Uruguay, 1925-1983. This is a very interesting country from the viewpoint of the political economy of protection, since it represents an extreme example of import-substitution policies. In spite of a population of less than three million people, three decades of restrictive regulations on foreign trade led to an almost closed economy by the 1960s. But the subsequent opening up was based on discretionary policies too, particularly in the late 1970s. Hence, one can expect Uruguay to be a good example of the rent-seeking society.[4]

The Uruguayan record is also interesting as regards economic growth. After being a wealthy country by the middle of the century, with a real income per capita similar to that of Belgium or Denmark, it ran into an almost complete stagnation, which led to social and political disintegration by the end of the 1960s. Hence, it is worth analyzing whether the conduct of trade policy, with its openness to private demands for protection, can account for the Uruguayan decline.

Last but not least, during 1925-1983 there were two periods of democracy (until 1932, and from 1943 to 1972) and two periods under dictatorship. The

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3 A time-series approach had been already used by Tacaks (1981) and by Magee and Young (1987). The first of these papers explained changes in the demand for protection in the U.S. as resulting from macroeconomic conditions. The second one tested for a negative relationship between protection levels and the labor/capital ratio, under the assumption that U.S. tariffs protect labor.

4 For a presentation of recent Uruguayan economic history, see Rama (1991).

latter resulted from economic crises: the Great Depression in the first case, the 1960s stagnation in the second one. These shifts enable us to assess the role of the political regime in the determination of trade policy, in contrast with the available theoretical and empirical studies, which have focused almost exclusively on democratic settings.

The next section discusses the criteria used to distinguish the foreign-trade regulations promoted by rent seekers from those arising from Pigouvian policy making. In section 3, a regression analysis links the resulting regulatory indicator with the institutional setting and the characteristics of trade policy. In section 4, innovations in the regulatory indicator are related to innovations in the growth rates of output and exports, with a time lag of up to twenty years. Section 5 concludes.

2. Measuring Endogenous Trade Policy

The extent of endogenous trade policy is quantified based on legislation. The selected foreign-trade regulations are reckoned on a yearly basis over all the laws, decrees and administrative resolutions published by the Uruguayan *Registro de Leyes y Decretos*, from 1925 to 1983. The ending year of the series corresponds to the last issue of the *Registro*. The starting year is chosen so as to include many observations prior to the deepening of import substitution policies that took place during the 1930s.

Since laws are passed by the Parliament, w' areas both decrees and resolutions are approved by the Executive, rent-seeking costs probably differ from statute to statute. Yet, they are all added up without any weighting, in order to minimize data manipulation. Similarly, no distinction is made between different protection instruments (tariffs, quotas, etc.). In this connection, it is worth recalling that the price and quantity means of trade intervention are equivalent when markets are competitive and there is no uncertainty.

In a first stage, only regulations explicitly identifying their promoter are taken into account, so as to make sure that they result from private demands. Quite surprisingly, in many cases this is not hidden. Consider for instance the following paragraph, from a resolution passed in 1937:

> "Whereas the records related to the application for a new gauging of Saccman-type clay tiles; provided that Mr. Horacio Acosta y Lara, owner of a national firm manufacturing this product, takes steps in order to raise that gauging since he considers that the low price on which customs tariff is based damages his own interests and puts him in disadvantage relative to foreign industry..."

This resolution, which accedes to the request, is not at all exceptional.

Generally, the promoters of these regulations are private firms or guilds (in two cases, with the support of the corresponding trade unions). Some of them have an astonishing lobbying capacity. For example, over the whole 1925-83 period, 71 foreign-trade regulations were approved for the benefit of a single textile firm, and 39 in favor of one manufacturing firm in the rubber sector. This is not far from an average of one additional regulation per year.

However, not all the statutes explicitly mentioning the name of their promoters are included in the series. Particularly, regulations allowing special import regimes for public-sector agencies and for non-profit organizations are omitted, unless the ultimate beneficiary of the transfer is clearly a private firm or sector.[5] Moreover, regulations whose approval is required by foreign governments based on reciprocity, or to comply with international agreements, are not included either. With these adjustments,

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[5] For instance, in 1942 the local government of Salto obtained a duty exemption to import the wood used for packing oranges. With Salto being the main citrus supplier in Uruguay, the measure is accounted as if it resulted from private rent seeking.

the number of regulations in this first group amounts to 1,849 for the whole 1925-83 period.

In a second stage, statutes which have no identified promoter but concern a small number of products (too small to arise from Pigouvian policy making) are added to the series. The basic criterion is to include all regulations modifying the import or export regime of no more than ten items at once, either final goods or inputs. This boundary between endogenous and Pigouvian policy making is, of course, arbitrary. But changing the boundary does not modify the pattern of the series. This suggests that there are two distinct types of Uruguayan foreign-trade regulations.

These statutes are counted no matter whether the resulting transfers are permanent or transitory. Regulations extending an already existing benefit are included too, with the exception of periodical inflation adjustments for the gaugings on which import tariffs are calculated. In all the cases, if the statutes concern simultaneously two to ten final goods or inputs, a separate regulation is accounted for each of the items, unless they correspond to the same industry.

After including the second group, the number of regulations in the series more than doubles, reaching 3,973 for the whole period. But note that this underestimates the actual figure, since the *Registro* publishes all laws and decrees, but only the most important administrative resolutions. Repeating the procedure described above for year 1970 on the basis of the *Diario Oficial*, which includes all resolutions, leads to a substantially higher number of regulations.[6] This bias is assumed to be stable over time.

In what follows, the number of regulations in the series in year t is identified as AT_t. These include regulations on imports AM_t, and regulations

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6 Since the *Diario Oficial* is issued daily, building the time series on this basis would represent an enormous amount of work, and therefore oblige to shorten considerably the period studied.

on exports AX_t.[7] Figure 1 shows the evolution of the three variables over time. It can be seen that the aggregate series AT_t has a first peak in the 1940s, and a huge second one in the 1970s. The former results basically from a large number of regulations on imports, particularly after the end of World War II. The latter, on the contrary, is due almost exclusively to regulations on exports.

(Insert Figure 1)

3. Explaining Endogenous Trade Policy

Changes in the extent of endogenous policy making cannot be directly inferred from Figure 1, since the size of the Uruguayan economy has changed over time. Consequently, the absolute number of regulations has to be scaled. From a theoretical point of view, the most appropriate deflator would be the number of firms, at least in the manufacturing sector. Unfortunately, Uruguayan industry surveys are scattered and incomplete, particularly when it comes to small units.[8] Hence, more standard deflators have to be chosen.

The first one is the aggregate output level Y_t. The problem with this series is that it is available only since 1935, so that ten yearly observations on foreign-trade regulations have to be set aside. The second one is the exports level X_t, which is available for the whole period.[9] The problem here is the significant short-run variability of the data. Since none of the deflators can be considered fully satisfactory, both have to be used in

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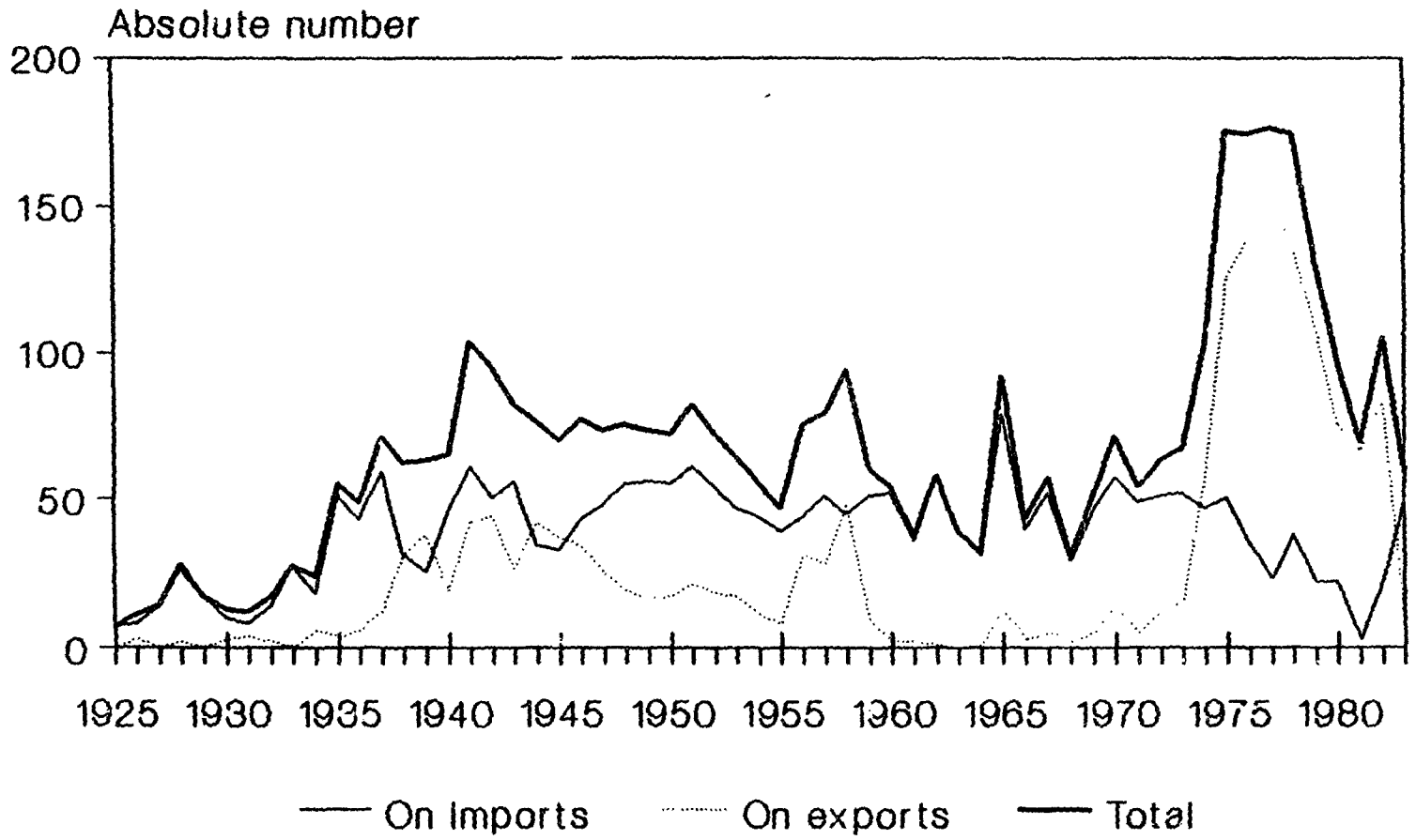
7 One would expect $AM_t + AX_t = AT_t$. However, this is not true for all years, since 6 of the statutes were ambiguous enough to prevent their classification.

8 Just to give an idea on what the data in Figure 1 mean, it is worth pointing out that there were only 158 manufacturing firms with more than fifty personnel in 1936, and 421 in 1968.

9 Using the imports level would lead to similar results, since international capital movements had a limited extent until the mid-1970s.

Figure 1

ENDOGENOUS FOREIGN-TRADE REGULATIONS
Passed per year



order to get some information on the extent of endogenous policy making.

Throughout, series scaled by Y or by X are indicated by subscripts y or x respectively. For instance, AM_y is identically equal to AM/Y, AX_x is identically equal to AX/X and so on.[10] All these ratios are scaled so as to average one hundred over the whole period. Figure 2 shows the evolution of AT_y and AT_x, which are the most general indicators. Although the series deflated by exports experiences larger fluctuations, the pattern is similar in both cases.[11]

(Insert Figure 2)

In Figure 2, the import-substitution peak of the 1940s is higher than the export-promotion peak of the 1970s. During the 1960s and the 1980s, in turn, endogenous policy making seems less prevalent, although the series never return to the level of the late 1920s and early 1930s. Obviously, the next question is whether the observed fluctuations are associated with changes in either institutions or economic policy choices. These changes are briefly summarized in Table 1.

(Insert Table 1)

At a first glance, it could appear that only the *form* of endogenous policy making is affected, since the aim of regulations keeps evolving over time so as to overrule changes in legislation. For instance, there is a large number of statutes setting special exchange rates until 1959, when the latter are replaced by explicit tariffs; then, the goal of regulations shifts to modifying the level of these tariffs. The pattern is similar in 1982, when

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10 Time subscripts are omitted for simplicity.

11 Important differences are associated with the drop of sales abroad during the 1942 drought, and to the periodical decline of beef exports (in 1951, 1957 and 1965) arising from the cattle cycle.

Figure 2

THE EXTENT OF ENDOGENOUS TRADE POLICY

Regulations scaled by economic activity

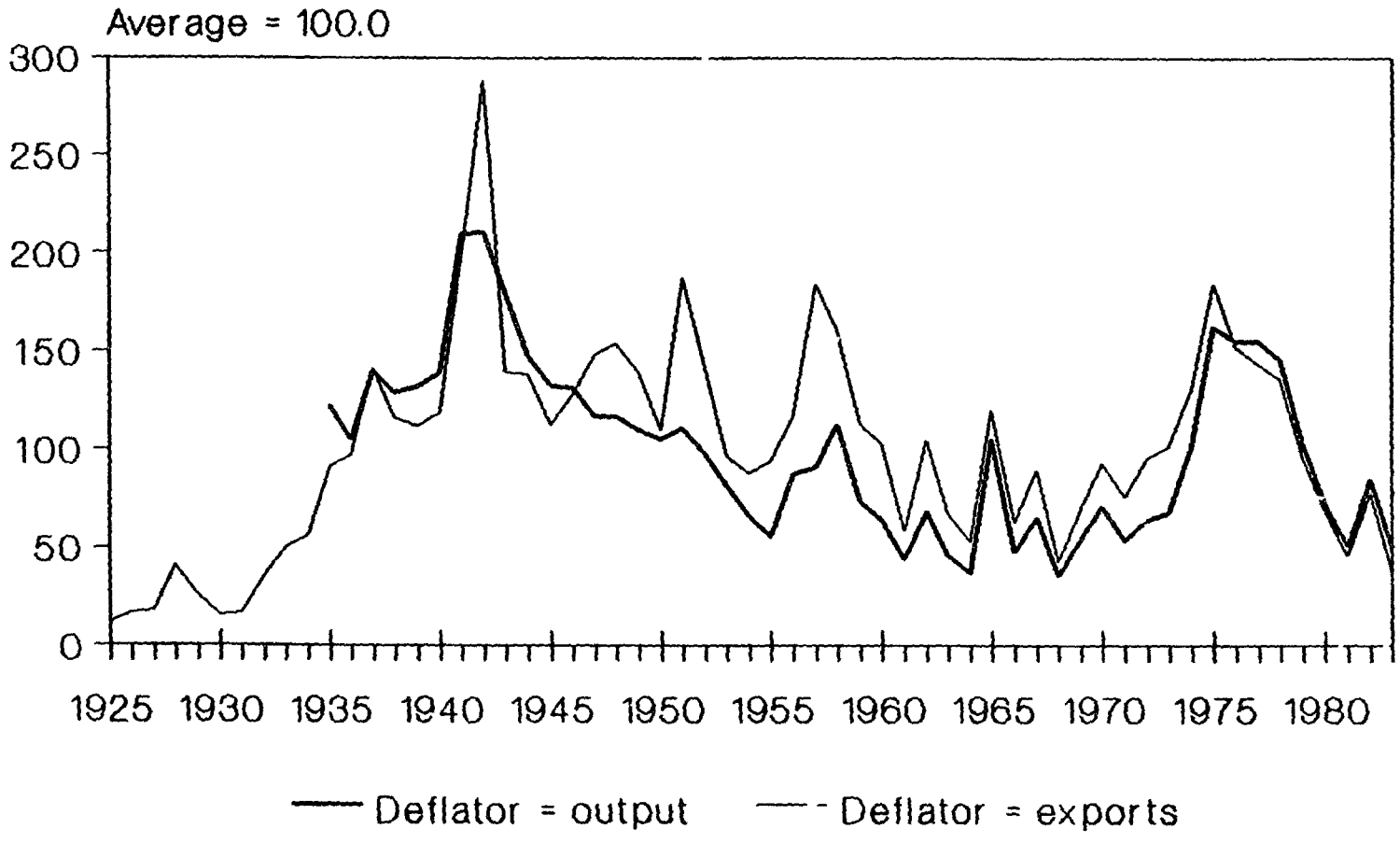

Table 1

POLITICS AND ECONOMIC POLICY IN URUGUAY

POLITICAL REGIME	Presidential regime + bi-party sharing of public administration	The "mild" dictatorship	Presidential regime until 1951 and again after 1967. Between both, bi-party collegiate + sharing of public administration		Military dictatorship
EXCHANGE RATE	Single exchange rate (gold standard)	Multiple exchange rates since 1933-34. A different exchange rate allowed for each foreign trade operation in 1937.		Until 1973, dual exchange rate regime: one (low) for trade operations. the other (high) for financial transactions. In 1974, they are unified and controls abolished.	
IMPORTS	General tariff of 31%+free import regime on inputs	In 1931, a 48% tariff is allowed for firms proving that they face import competition. Import licenses are established in 1938. In 1941, a central bureau is created to manage all foreign trade operations.		Multiple exchange rates are replaced by explicit tariffs, but the latter include many different duties.	Gradual reduction of protective barriers.
EXPORTS	There are taxes on traditional exports (beef, wool and tanned hides) until 1975. Some exports (cattle on the hoof, non-tanned leather...) are banished in order to provide cheap inputs to the manufacturing sector.			Export subsidies are allowed since 1964. The regime is enlarged in 1967 and 1970. Widespread use of these subsidies since 1974.	Subscription to the GATT's code.

1925 1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980

imports start to be clustered in groups with the same protection rate; then, regulations aim increasingly at raising the reference prices on which tariffs are applied, or at changing positions from cluster to cluster.

However, a more careful analysis shows that institutions and the orientations guiding economic policy do also have an impact on the *extent* of endogenous trade policy. The analysis is based on ordinary least-squares regressions of indicators AT_y, AT_x, ..., AX_x on their lagged values and a on set of three dummy variables arising from Table 1. These variables are intended to capture dictatorship, a development strategy based on import substitution, and active export promotion. In what follows they are indicated as DP, IS and EP respectively.

Variable DP is set equal to zero until 1932, and from 1943 to 1972. It is equal to .5 during the "mild dictatorship" (so called because some democratic institutions were kept) and equal to 1 during the tough military dictatorship starting in 1973.[12] From a theoretical viewpoint, the expected sign for the DP coefficient is ambiguous. On the one hand, the lack of possibilities for criticizing decisions could increase the supply for protection by policy makers. But on the other hand, reduced political competition could also lead to a lower demand for protection by parties.[13]

The two other dummies reflect the main orientations guiding the conduct of trade policy. Variable IS is null until 1930. It is equal to one from 1931 to 1959, a stage in which inward-oriented growth was seen as the key to economic development by successive governments. It takes the value of .5 since 1960, when multiple exchange rates were abolished. And it becomes null since 1974, when a gradual reduction of barriers to imports started. Since import-substitution policies are discretionary, the coefficient of IS is expected to be positive.

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12 An attempt to distinguish, within democratic rule, between presidential regime and bi-party collegiate did not lead to significant coefficients.

13 Among the few analyses on this issue, see Tullock (1986).

Periods are relatively similar for EP, although these two orientations should not be seen as mutually exclusive. Thus, EP is set equal to zero until 1963 and equal to .5 since 1964, when export subsidies were established. It takes the value of one in 1974, when these subsidies started to be used on a large scale. Finally, it becomes null again in 1980, after Uruguay subscribed to the GATT's code of subsidies.[14] The expected coefficient of EP is also positive.

An attempt was made to include business-cycle indicators among the independent variables. Indeed, adverse shocks could stimulate a shift of the affected production factors out of economic activity and into political activity, leading to the so-called "compensation effect" (Maggee, Brock and Young, 1989, chapter 11). Conversely, technological innovations proceeding at a fast pace could hinder the social and economic stability required for distributional coalitions to emerge (Olson, 1982, chapter 3). However, when the terms-of-trade level and the growth rate of output were included in the analysis, no significant coefficients were obtained either for their current or their lagged values.

Regression results are reported in Table 2.[15] Since the endogenous variables average one hundred over the whole period, the coefficients associated with the dummies can be seen as the contemporary percentage increases in the extent of endogenous trade policy which result from changes in institutions and in economic policy orientations. The long-run effect of these changes is obtained by taking into account the coefficient on the lagged endogenous variable.[16]

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14 With these periods, the correlation coefficient between IS and EP is -.51.

15 Previously, it was checked that the scaled number of regulations was stationary in all cases (for technical details, see the Appendix).

16 For instance, the long-run value of AT_y increases by 103% (= 40.75/(1-.604)) after shifting from democracy to dictatorship. Note that the "percentage" interpretation is not accurate when the dependent variable departs from the average of hundred. But the log specification cannot be used since there are years with no

(Insert Table 2)

At the aggregate level, when no distinction is made between regulations on imports and regulations on exports, all the coefficients are positive and highly significant. The same happens when only regulations on exports are taken into account. The effect of both dictatorship and export promotion becomes much weaker in the case of regulations on imports. But it is worth noting that coefficients on discretionary policies are positive in all the regressions.

At the aggregate level also, import substitution appears to be more harmful than export promotion, since its effect on the extent of endogenous policy making is larger by about two thirds. This result seems in accordance with a considerable amount of empirical evidence on the relative performance of inward- and outward-oriented economies (for a comprehensive survey, see Leamer, 1992). However, the endogenous variables in Table 2 concern endogenous trade policy, not economic performance. The question remains whether there is a link between these two variables.

4. The Growth Effects of Endogenous Trade Policy

The literature on the welfare costs of endogenous trade policy is mainly concerned with static costs. This is the case, particularly, with the analysis on the dissipation of rents by competition among potential beneficiaries. If the gains from trade intervention are seen as a prize to be contested, risk-neutral rent seekers are expected to allocate an amount of resources approximately equal to the prize to influence the outcome of the political contest. These expenditures (called the Tullock cost) may be by far larger than the deadweight loss (or Harberger cost) traditionally associated with barriers to trade.

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endogenous regulations on exports.

Table 2

THE DETERMINANTS OF ENDOGENOUS TRADE POLICY

End. var.	Years	Cons.	Lagged end. var.	DP	IS	EP	$\bar{R}^2$	Q(10)
AT_y	1936-83	-19.39	0.604	40.75	59.21	31.98	0.70	9.611
		(-1.382)	(5.929)	(2.991)	(2.912)	(2.283)		
AT_x	1926-83	3.68	0.545	25.82	48.85	28.20	0.56	9.892
		(0.289)	(5.462)	(1.865)	(3.159)	(1.589)		
AM_y	1936-83	14.02	0.376	13.50	63.46	5.47	0.58	3.007
		(0.811)	(2.762)	(0.955)	(2.654)	(0.321)		
AM_x	1926-83	21.58	0.463	-2.30	51.83	8.22	0.54	10.872
		(1.535)	(4.142)	(-0.157)	(3.054)	(0.442)		
AX_y	1936-83	-65.31	0.615	87.61	91.62	82.02	0.73	7.701
		(-2.314)	(6.607)	(3.231)	(2.998)	(2.975)		
AX_x	1926-83	-21.75	0.588	66.89	52.28	68.08	0.64	5.364
		(-0.999)	(6.267)	(2.481)	(2.111)	(2.209)		

Note: Numbers in parenthesis are t-statistics. The Q(10) are the Box-Pierce statistics.

Within the neoclassical framework, both types of costs lead to level effects, analogous to once-and-for-all downward shifts in production possibilities, and not to growth effects (see Lucas, 1988). Yet, there is a strong suspicion in the sense that endogenous trade policy reduces the growth rate of the economy. The recent vintage of literature on endogenous growth has provided two analytical frameworks which give some support to this suspicion.

The first one emphasizes the role of non-cooperative equilibria among identical rent seekers (see Terrones, 1990, and Rama, 1992). Each of the latter may allocate some of his time or resources to carry out influence activities which are individually profitable, but socially wasteful. This reduces, period after period, the amount of time or resources available for accumulation of the reproducible factor (i.e. human or physical capital). Thus, the growth rate of the economy is lower the higher the negative externality associated with influence activities.

The second approach stresses adverse selection among individuals who differ one from another by their talent (see Murphy, Shleifer and Vishny, 1991). Each of them has to choose whether to be a wage earner, an entrepreneur or a rent seeker. In countries where rent seeking rewards talent more than entrepreneurship does, the most able people concentrate on the former activity. Assuming that growth depends on innovations, and that innovations are made only by talented entrepreneurs, such countries are characterized by low rates of growth.

This paper addresses the connection between endogenous trade policy and economic growth from a purely empirical viewpoint. The chosen approach is very much in the spirit of Chapter 1 in Blanchard and Fischer (1989). First, univariate models are fitted to the rates of growth of output and exports, and to the six indicators measuring the extent of endogenous trade policy.[17] The estimated residuals of these processes can be seen as the series' innovations. Then, a correlation analysis is carried out between innovations

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[17] Technical details are reported in the Appendix.

in growth rates and lagged innovations in endogenous trade policy. A time lag of up to twenty years is allowed so as to capture long-run effects.

Since there are six indicators measuring the extent of endogenous trade policy (AT_y, ..., AX_x) and two growth rates (output and exports), twelve correlation analyses are carried out. In spite of the measurement errors reported in section 2, some clear patterns emerge from this exercise. In addition, it is apparent that results do not depend very much on whether regulations are deflated by output or by exports. The comments that follow highlight some of the most illustrative combinations of variables.

Figure 3 shows the relationship between the extent of endogenous trade policy and the growth rate of output. The upper panel is based on the aggregate series (AT_y), while the lower panel considers regulations on imports only (AM_y). In both cases, a significantly *positive* correlation is observed after three or four years. This can be due to the fact that foreign-trade regulations usually create a potential rent, which can be appropriated only by investing in the favored sector.

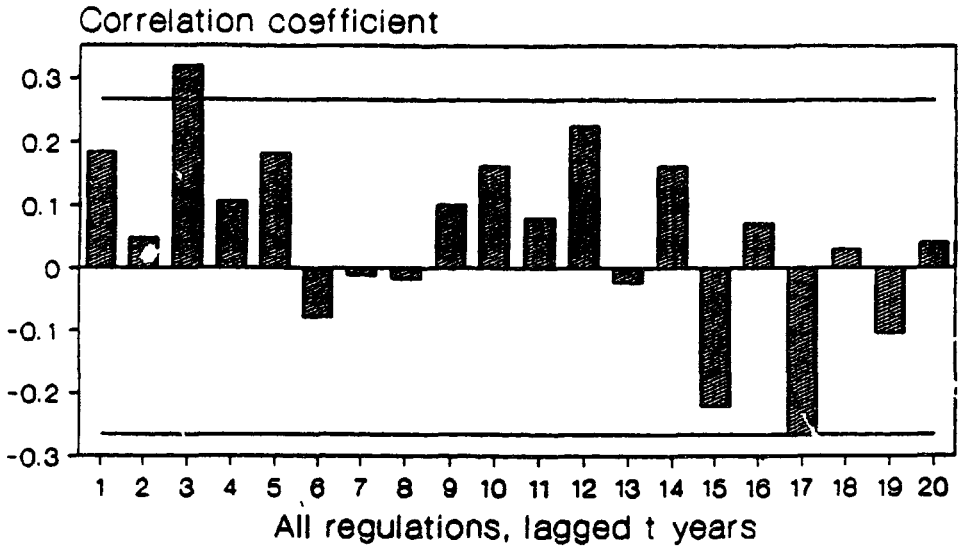
(Insert Figure 3)

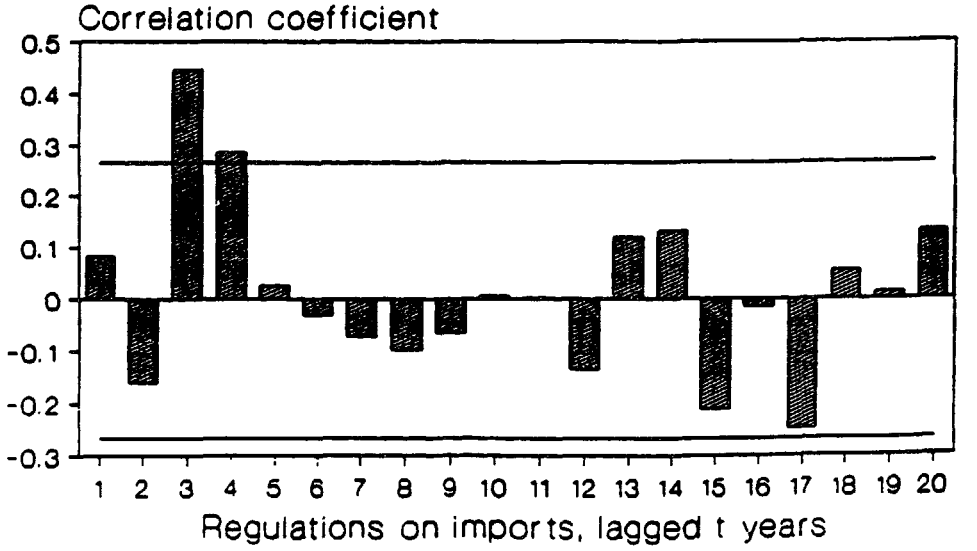
However, the above paragraph explains sectoral growth. It cannot account for growth at the aggregate level. According to the theory of international trade, an increase in the number of trade regulations should lead to a once-and-for-all drop in output. And it could even account for a permanent reduction in the growth rate of the economy, according to the theory of endogenous growth. The significantly positive correlation reported by Figure 3 suggests that other elements, not taken into account by these theories, do matter in the short run.

The results are quite different in the long run. According to Figure 3, the positive effect disappears after the fourth year, and becomes significantly negative more than ten years later. This would be consistent with Schumpeter's view of competition as the engine of economic growth. But

Figure 3

ENDOGENOUS TRADE POLICY AND OUTPUT GROWTH





Note: The horizontal lines indicate statistically significant correlation coefficients at the 5% level.

it is worth noting the extent of the time lags involved. In the Uruguayan case, the endogenous trade policy peak of the 1940s would account (at least partly) for stagnation in the 1960s. Similarly, the country should suffer in the 1990s the effects of the endogenous trade policy peak of the 1970s.

Figure 4 reports the relationship between the extent of endogenous trade policy and the growth rate of exports. The upper panel is based again on the aggregate series (AT_y), while the lower one concerns regulations on exports only (AX_y). Here, the positive impact seems much more moderate, and takes place within a shorter time lag. But the most impressive thing in Figure 4 is the steady and long-lasting negative impact of endogenous trade policy on the growth rate of exports.

(Insert Figure 4)

5. Concluding Remarks

This paper presented time series on a well-defined type of endogenous trade policy comprising almost six decades. This allowed to show that import-substitution strategies increase the extent of endogenous policy making. It also allowed to show that the latter has a negative long-run effect on the growth rates of output and exports. This is consistent with both theoretical analysis and economic intuition. Hence, in spite of measurement errors, the series in this paper probably convey information on actual economic trends.[18]

Some other results are more unexpected. First of all, the extent of endogenous trade policy also increases under active export promotion. This suggests that the main reason underlying the observed differences in the

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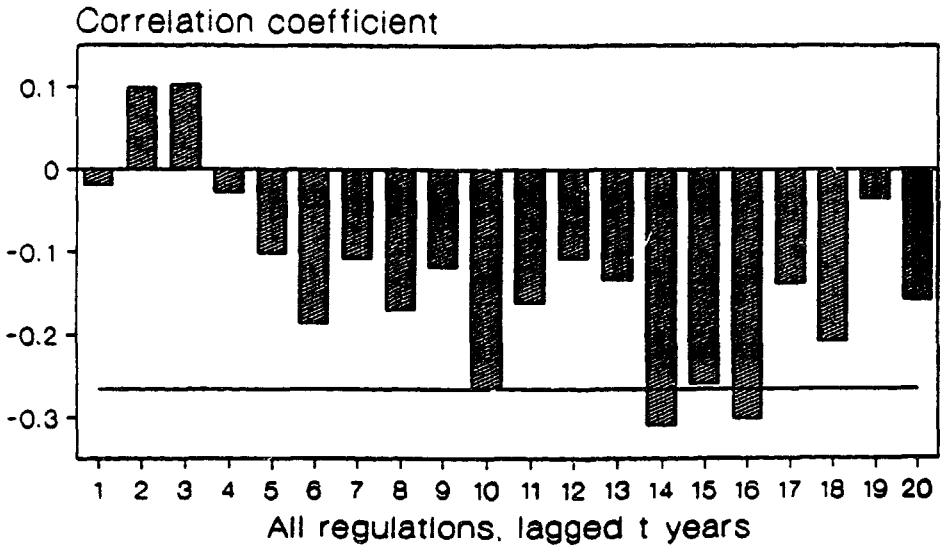
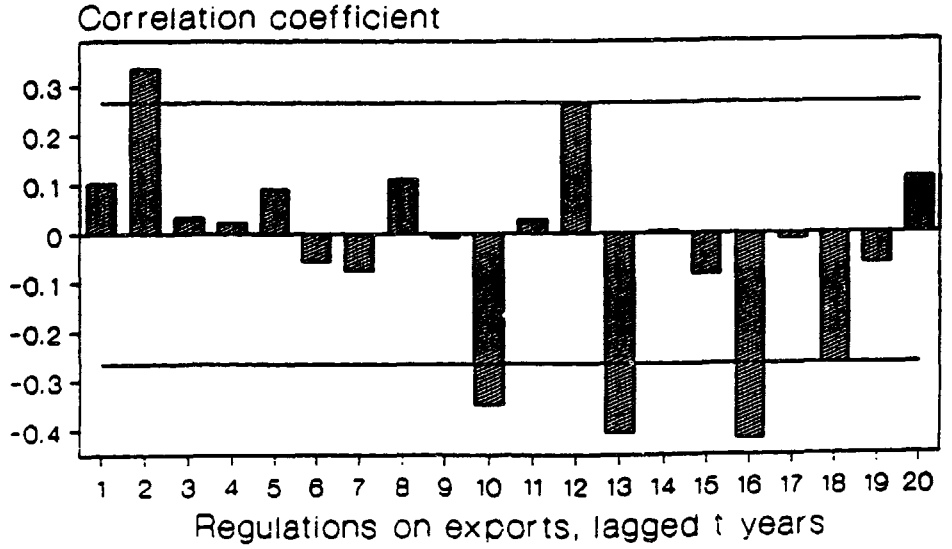
[18] Of course, this is just a first step in the analysis of the presented data set. New insights could be drawn from a higher disaggregation of the data, by looking at the contents of the regulations or at the favored activity sectors. A first attempt of sectoral analysis can be found in Rama (1992).

Figure 4

ENDOGENOUS TRADE POLICY AND EXPORTS GROWTH





Note: The horizontal lines indicate statistically significant correlation coefficients at the 5% level.

economic performance of inward- and outward-oriented countries may not be the mere existence of wasteful distributional activities. Since the latter seem to characterize both types of policy orientations, it is worth looking at competing explanations, such as those stressing increasing returns to scale, or R&D activities.

A second unexpected result concerns the relationship between the political regime in force and the extent of endogenous trade policy. This is in contradiction with the conventional assertion that dictatorships are more efficient than democracies. More generally, the results point out that the extent of endogenous trade policy increases with the discretionary power on the part of political agents, no matter whether such a power arises from political conditions or from economic orientations.

Finally, the relationship between the extent of endogenous trade policy and the lagged growth rates of output and exports appears to be less direct than expected. Although there is a negative long-run effect, the involved time lags are surprisingly long. In addition, the short-run effect is positive. This would point out that the social value of resources invested in the protected sector is higher than the corresponding private cost.[19] Whatever the reasons, the observed time pattern suggests that the loss of political support by policy makers supplying protection could be smaller than is usually assumed.

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[19] Such would be the case if there were positive externalities from investment in the protected sector, or if there were idle production factors in the economy. Similarly, the social value of the resources invested in lobbying could be negative, as considered by Bhagwati (1982).

TECHNICAL APPENDIX

Table A-1 displays some statistical properties of the eight time series used for the analysis in sections 3 and 4. The augmented Dickey-Fuller test was performed on each of these series in order to check for unit roots. The results suggest that both output and exports have a stochastic time trend, whereas the extent of endogenous trade policy is stationary (the unit root hypothesis is rejected for 4 out of 6 indicators). It follows that the regressions in section 3 have standard statistical properties. But notice that even if the extent of endogenous trade policy was non stationary, the t coefficients of the dummies and the constant terms would still have an asymptotic normal distribution.

The innovations used in the correlation analysis in section 4 are the residuals of univariate models estimated for each of the eight variables. The order of differentiation d results from the discussion in the paragraph above. Orders p and q, in turn, are chosen based on the Akaike's Information Criterion (AIC), after performing a grid search over $0 \leq p \leq 2$ and $0 \leq q \leq 2$. It could be argued that innovations in the extent of endogenous trade policy are partly due to regime switching (captured through dummy variables in section 3). However, switching is only sporadic, so that the main results should not be affected.

Finally, the correlation analysis was also applied to the relationship between lagged growth of output and exports on the one side, and the extent of endogenous trade policy on the other. No clear patterns emerged from this exercise, thus suggesting unidirectional causality. This confirms the results of the regression analysis in section 3, where no significant coefficients could be obtained for business cycle variables, either contemporary or lagged.

Table A-1

Variable	Number of observations	Testing for unit roots: ADF	p	Estimated univariate process	$\bar{R}^2$	Q(10)
Log Y	54	-1.039	1	$d\log Y_t = 0.019 - 0.566.d\log Y_{t-1} + e_t + 0.976.e_{t-1}$ (5.618)(-2.729) (4.264)	0.23	3.510
Log X	58	-0.351	1	$d\log X_t = 0.015 + e_t - 0.620.e_{t-1}$ (0.656) (-3.890)	0.20	4.066
ATy	48	-2.107	0	$ATy_t = 3.841 + e_t + 0.784.e_{t-1}$ (20.82) (5.281)	0.42	24.137
ATx	58	-3.186 **	0	$ATx_t = 24.23 + 0.643.ATx_{t-1} + 0.068.ATx_{t-2} + e_t$ (6.032) (4.684) (0.506)	0.47	6.343
AMy	48	-3.062 **	0	$AMy_t = -0.315 + 1.290.AMy_{t-1} - 0.307.AMy_{t-2} + e_t - 0.955.e_{t-1}$ (-0.017) (4.633) (-1.332) (-2.975)	0.60	6.896
AMx	58	-3.312 **	0	$AMx_t = 15.56 + 0.571.AMx_{t-1} + 0.146.AMx_{t-2} + e_t$ (5.579) (4.269) (1.095)	0.45	9.055
AXy	48	-2.194	0	$AXy_t = 1.541 + 0.810.AXy_{t-1} + e_t$ (2.397) (9.378)	0.65	5.669
AXx	58	-2.765 *	0	$AXx_t = 8.500 + 0.763.AXx_{t-1} + e_t$ (2.768) (8.878)	0.58	4.748

Note: Numbers in parenthesis are t-statistics. The Q(10) are the Box and Pierce statistics. The ADF column reports the t-statistic for coefficient ϕ in the following specification:

$$dz_t = \mu + \phi.z_{t-1} + \sum_{i=1}^{p} \delta_i.dz_{t-i}$$

with z being each of the variables indicated in the first column of the table. The rejection of the unit root hypothesis at the 10 and 5% level is indicated with one and two asterisks respectively.

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